REMARKS

The Office Action dated February 20, 2008 has been received and carefully noted. The above amendments to the claims, and the following remarks, are submitted as a full and complete response thereto.

Claims 1, 11-21, 23-25, 27-28, 30-31 and 33 have been amended to more particularly point out and distinctly claim the subject matter of the invention. Claim 34 has been newly added. No new matter has been added and no new issues are raised which require further consideration or search.

Claims 4, 7-10, 14, 17-20, 24 and 27-30 were indicated to be allowable. Applicants thank the Examiner for indicating the allowability of these claims. However, based on the arguments presented below, Applicants request that claims 4, 7-10, 14, 17-20, 24 and 27-30 be allowed in the present form and further request allowance of all of presently pending claims 1-4, 6-31 and 33-34.

Claims 1-3 and 5-6 were rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,533,067 to Jamal (hereinafter Jamal). Applicants submit that Jamal fails to teach all of the subject matter recited in amended claim 1 and related dependent claims.

Claim 1, upon which claims 2-10 depend, recites a method including determining from a received signal at least one variable representing statistical characteristics of a channel and determining a prefilter using the at least one variable representing the statistical characteristics of the channel. The method also includes adapting sample rate of a prefilter output of the prefilter for an adaptive channel estimator used when receiving

signals, wherein the sample rate is adapted in relation to the prefilter input signal and the at least one variable representing the statistical characteristics of channel determined from the received signal.

Claim 11, upon which claims 12-20 depend, recites a prefiltering apparatus including a variable determiner configured to determine, from a received signal, at least one variable representing statistical characteristics of a channel. A determiner configured to determine a number of prefilter taps of a prefilter using the at least one variable representing the statistical characteristics of the channel. The prefiltering apparatus also includes an adaptater configured to adapt sample rate of a prefilter output of the prefilter for an adaptive channel estimator used when receiving signals, wherein the sample rate is adapted in relation to the prefilter input signal and the at least one variable representing the statistical characteristics of channel determined from the received signal.

Claim 21, upon which claims 22-30 depend, recites an apparatus including a variable determiner configured to determine, from a received signal, at least one variable representing statistical characteristics of a channel. A determiner configured to determine a number of prefilter taps of a prefilter using the at least one variable representing the statistical characteristics of the channel. The apparatus also includes an adaptater configured to adapt sample rate of a prefilter output of the prefilter for an adaptive channel estimator used when receiving signals, wherein the sample rate is adapted in relation to the prefilter input signal and the at least one variable representing the statistical characteristics of channel determined from the received signal.

Claims 31 recites a prefiltering apparatus that includes variable determining means for determining from a received signal at least one variable representing statistical characteristics of the channel. Determining means for determining a number of prefilter taps of a prefilter using the at least one variable representing the statistical characteristics of the channel. The prefiltering apparatus also includes adapting means for adapting the sample rate of a prefilter output of the prefilter for a channel estimator used when receiving signals, wherein the sample rate is adapted in relation to the prefilter input signal and the at least one variable representing the statistical characteristics of channel determined from the received signal.

Claim 33 recites an apparatus that includes variable determining means for determining, from a received signal, at least one variable representing statistical characteristics of a channel. Determining means for determining a number of prefilter taps of a prefilter using the at least one variable representing the statistical characteristics of the channel. The apparatus also includes adapting means for adapting sample rate of a prefilter output of the prefilter for an adaptive channel estimator used when receiving signals, wherein the sample rate is adapted in relation to the prefilter input signal and the at least one variable representing the statistical characteristics of channel determined from the received signal.

Claim 34, upon which claims 2-10 depend, recites a computer program embodied on a computer readable medium, said computer program configured to control a processor to perform determining from a received signal at least one variable representing statistical characteristics of a channel and determining a prefilter using the at least one

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variable representing the statistical characteristics of the channel. The process is also configured to perform adapting the sample rate of a prefilter output of the prefilter for an adaptive channel estimator used when receiving signals, wherein the sample rate is adapted in relation to the prefilter input signal and the at least one variable representing the statistical characteristics of channel determined from the received signal.

As outlined below, Applicants submit that the cited reference of Jamal does not teach or suggest the elements of claims 1-3 and 5-6.

Jamal discloses that in a digital signal transmission system, a receiver receives a signal, wherein the signal bandwidth of the system exceeds the system symbol rate. A correlation and sampling circuit receives a baseband signal, samples the signal eight times per symbol time, correlates, generates a channel estimate and down-samples the sampled signal to form an observed signal. This signal is filtered in a prefilter, whose output is sampled at symbol rate and the obtained signal is delivered to a channel equalizer which performs a viterbi algorithm with non-quadratic metric calculation and generates estimated symbols.

A channel estimation filter receives a symbol sequence which contains alternate zero-value symbols and the estimated symbols and generates an estimated signal. An error signal is generated and used to adapt the channel estimate and also to generate weight factors.

The coefficients of the prefilter are generated as a function of the channel estimate and the weight factors. Coefficients are generated in a metric calculation filter, by convolving the channel estimate with the prefilter and are used to generate the estimated

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symbols. The transmission channel, excluding the prefilter, is estimated explicitly so as to enable fast channel changes to be followed. The use of the weight factors enables a short channel estimate to be used. The insertion of the zero-value symbols simplifies adaptation of the channel estimate.

The Office Action relied on column 9 of Jamal as allegedly disclosing the subject matter recited in amended claim 1. Applicants submit that Jamal fails to teach each of the elements disclosed in amended claim 1. For instance, Jamal does not teach "adapting sample rate of the prefilter output for a channel estimator used when receiving signals, wherein the sample rate is adapted in relation to the prefilter input signal **and** the at least one variable representing the statistical characteristics of the channel determined from the received signal", as recited, in part, in amended claim 1 (emphasis added).

The Office Action did not properly address each of the features recited in what was formerly claim 5 and has since been cancelled and the subject matter incorporated into amended claim 1. The amended subject matter of claim 1 recites that the sample rate is adapted in relation to "the prefilter input signal **and** the at least one variable." Referring to column 9, lines 30-37 of Jamal, a prefilter circuit 20 includes a prefilter 26 which receives the prefilter function from a filter generator 38. An observed signal passes the prefilter and is down-sampled to "symbol rate"...so as to obtain the prefiltered, observed signal (see column 9, lines 32-36) (emphasis added).

According to Jamal, the observed signal is the signal that is down-sampled in order to obtain a prefiltered signal. The down-sampling of the observed signal is not comparable to adapting a sample rate in relation to a prefilter input signal **and** at least one

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variable representing the statistical characteristics of the channel determined from the received signal, as recited, in part, in claim 1. The down-sampling operation disclosed in Jamal simply does not teach adapting a sample rate in relation to a prefilter input signal. Furthermore, because Jamal fails to teach adapting a sample rate in relation to a prefilter input signal, Jamal clearly does not teach adapting a sample rate in relation to a prefilter input signal and at least one variable representing the statistical characteristics of the channel determined from the received signal.

Therefore, for at least the reasons stated above, Jamal fails to disclose all of the subject matter recited in amended claim 1. By virtue of dependency, claims 2-3 and 5-6 are also allowable over Jamal. Withdrawal of the rejection of claims 1-3 and 5-6 is kindly requested.

Claims 11-13, 15-16, 21-23, 25-26, 31 and 33 were rejected under 35 U.S.C. §103(a) as being unpatentable over Jamal in view of U.S. Patent No. 6,466,616 to Stenstrom et al. It is respectfully asserted for at least the reasons provided herein below, Jama and Stenstrom fail to teach or suggest the recitations of the pending claims. Reconsideration is requested.

As stated above Jamal fails to teach or suggest "adapting sample rate of the prefilter output for a channel estimator used when receiving signals, wherein the sample rate is adapted in relation to the prefilter input signal and the at least one variable representing the statistical characteristics of the channel determined from the received signal", as recited, in part, in amended claim 1 (emphasis added). Amended independent claims 11, 21, 31 and 33-34 also contain subject matter similar to above-noted features

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recited in independent claim 1. Therefore, Jamal fails to teach all of the subject matter recited in any of the independent claims 1, 11, 21, 31 and 33-34.

Regarding Stenstrom, Applicants submit that Stentstrom also fails to cure the above noted deficiencies of Jamal with respect to amended independent claims 1, 11, 21, 31 and 33-34. Stenstrom discloses an apparatus that minimizes the computational load and reduces the overall power consumption in a receiver by adjusting the number of taps used in a pre-filter and an equalizer. In operation, a mobile station 400 which includes a controller 410 evaluates an estimated quality parameter and a number of pre-filter taps, if any, to be used in a pre-filter 402. The pre-filter taps may be used to reduce inter-symbol interference (ISI) and improve the quality of a signal received in a receiver.

Stenstrom fails to teach "an adaptor configured to adapt sample rate of the prefilter output for a channel estimator used when receiving signals, wherein the sample rate is adapted in relation to the prefilter input signal and the at least one variable representing the statistical characteristics of channel determined from the received signal", as recited, in part, in amended independent claim 11 and similarly in independent claims 21, 31 and 33-34. The teachings of Stenstrom are limited to reducing power consumption of a receiver by adjusting the number of taps used in a pre-filter and equalizer. The disclosure of Stenstrom does not teach the adaptation of a sample rate of a prefilter output, where the sample rate is adapted in relation to the prefilter input signal and at least one variable representing statistical characteristics or a channel.

Therefore, Jamal and Stenstrom, taken individually or in combination, fail to teach or suggest all of the subject matter recited in amended independent claims 1, 11, 21, 31

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and 33-34. By virtue of dependency, dependent claims 2-4, 6-10, 12-20 and 23-30 are also allowable over Jamal and Stentstrom. Withdrawal of the rejection of claims 4, 7-10, 14, 17-20, 24, 27-30 is kindly requested.

As discussed above, claims 1-4, 6-31 and 33-34 recite subject matter which is neither disclosed nor suggested in the prior art references cited in the Office Action. It is therefore respectfully requested that all of claims 1-4, 6-31 and 33-34 be allowed, and this application passed to issue.

If for any reason the Examiner determines that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact, by telephone, the applicants' undersigned attorney at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

In the event this paper is not being timely filed, the applicants respectfully petition for an appropriate extension of time. Any fees for such an extension together with any additional fees may be charged to Counsel's Deposit Account 50-2222.

Respectfully submitted,

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